

NFAT Review: Macroenvironmental and Socio-economic Considerations

Direct Testimony Presentation

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Outline

1. Mandate
2. Definitions
3. NFAT Information
4. Information to Assist the PUB
 - Hydroelectric
 - Wind
5. Conclusions

1. Mandate

Mandate

- Review the available evidence concerning the macroenvironmental impact of the PDP and the alternative plans
- Comment on the determination of the macroenvironmental impact of the hydroelectric resources of the PDP and the alternative plans

Mandate

- The potential for development of additional wind resources in Manitoba as part of an alternative plan to the PDP or as part of an optimized plan to delay a decision to proceed with the PDP
- Identify additional relevant information that would assist the Board

2. Definitions

Scoping the Definitions

- PUB, in Order 67-13
 - Required Manitoba Hydro and any approved intervener intending to submit definitions
 - Manitoba Hydro, CAC, MMF and others submitted definitions

Applying the Definitions

- Macroenvironmental impact:
 - *the collective macro-environmental consequences of changes to air, land, water, flora and fauna, including the potential significance of these changes, their equitable distribution within and between present and future generations*

Applying the Definitions

- Understanding of “Collective”
 - A bringing together of the consequences resulting from all components of the PDP or of the alternative plans that maintains their defining features

Applying the Definitions

- Understanding of “Consequences”
 - Potential and likely, positive and adverse, direct and indirect, individual and cumulative, secondary and synergistic
 - Determined by
 - Probability of occurrence
 - Scientific uncertainty

Applying the Definitions

- Understanding of “Significance”
 - Magnitude
 - Geographic extent
 - Duration and frequency
 - Degree to which the consequences of the changes are reversible or irreversible
 - Ecological context

Applying the Definitions

- Significance definition
 - In wide use across Canada
 - Comparison across time and jurisdictions
 - Comparison across resources and plans

Applying the Definitions

- Socio-economic impacts and benefits
 - *...a high level summary of potential effects to people in Manitoba, especially Northern and Aboriginal communities, including such things as employment, training and business opportunities; infrastructure and services; personal family and community life; and resource use*

Applying the Definitions

- Understanding of definition
 - The identified indicators of socio-economic impact are not intended to be exhaustive, but others are relevant, especially to Aboriginal communities
 - The term “Aboriginal communities” is inclusive of the identified geographic Aboriginal reserves and residential communities within the Province but also the broader Métis and First Nation communities within the Province

2. NFAT Information

NFAT Information – PDP

- *“Although cost-benefit analysis could be used to justify proceeding with a project that is likely to cause significant adverse environmental effects, justification can take place only after the likelihood of the significant adverse environmental effects has been determined”*

CEAA 2012. Reference Guide: Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects.

NFAT Information – PDP

- Multiple Account Benefit-Cost Analysis
 - CEA Agency comment suggests Conawapa would have to undergo an environmental assessment prior to a justification decision such as the NFAT

NFAT Information – PDP

- Multiple Account Benefit-Cost Analysis
- MH/MMF 20c
 - “A cost-benefit analysis could be appropriate where information concerning collective consequences of environmental changes (including cumulative effects) and the significance of these changes in relation to the preferred alternative had been previously determined and were considered in the cost-benefit analysis.”

NFAT Information – MNP

- The PDP:
 - *...the net environmental benefits of Manitoba Hydro's (MH) preferred plan are found to outweigh its overall environmental costs in a regional and global context (MNP, NFAT Review, p.1)*
 - Other plans could perform worse on basis of GHGs, but do they perform better in other ways?

NFAT Information – MNP

- Implication
 - Without knowledge of the macroenvironmental impacts of the alternative plans with respect to the consequences of other (i.e. non-GHG) changes to the environment, it is not possible to determine whether an alternative plan performs better overall than the PDP
 - Therefore a need to provide information respecting these consequences

NFAT Information – Wind

- Development advantages
 - Minimized transmission losses
 - Modularity
 - Shorter lead times
 - Low operating costs
 - Contracting
 - Renewing or decommissioning
 - Dependable energy

NFAT Information – Wind

- Development disadvantages
 - Lack of predictability
 - Operation during winter peak loads
 - Low export potential
 - Not dependable capacity

NFAT Information – Wind

- The MA-BCA compared the PDP to three plans:
 - Plan 1 – Gas Thermal with No New Interconnection (All Gas)
 - Plan 2 – Keeyask with No New Interconnection (K22/Gas)
 - Plan 4 – The Smaller Interconnection Alternative (K19/Gas24/250MW)

NFAT Information – Wind

- The MA-BCA did not compare the PDP to any of the alternative plans containing wind resources
 - Plan 3: Wind/Gas – nominal wind capacity of 1755 MW
 - Plan 9: Wind/Conawapa – nominal wind capacity of 390 MW
- Hydro concluded that the two plans with wind generation were “clearly uneconomic”

NFAT Information – Wind

- Wind as a result of unintended delays:
 - Manitoba Hydro notes that it also includes wind generation as a resource option in the event of significant delays or deferral of large hydro, if large hydro cannot be built due to environmental or regulatory restriction
 - Alternative plans were not developed for the timing or necessity of Keeyask in the short to medium term

NFAT Information – Wind

- Wind as a part of another pathway:
 - *many other possible plans that could occur in each of these five pathways, resulting, for example, from inclusion of other options such as wind generation more DSM and earlier retirement of existing Manitoba gas generation*
 - *it is expected inclusion of these other options would not substantially alter the comparison of these pathways and the associated development plans (NFAT, Chap. 14, p.36)*

NFAT Information – Wind

- Cost considerations
 - Evidence of declining cost
 - Use of generic 65 MW facility, as opposed to optimized resource selection
 - Cost averaging as opposed to competitive costing
 - NFAT handicaps technology with expected improvement (LCA, Appendix 3A, p.3A-18)

NFAT Information – Wind

- Optimized development strategy:
 - “Economic delay”
 - Due to expected cost declines, wind could play a role in a plan to avoid the PDP for the foreseeable future (i.e. beyond 2030)
 - Doing so would avoid the adverse macroenvironmental impact of the PDP

NFAT Information – Plan 17

- Plan 17 – “Economical delay”
- Filed by LCA in March 2014
 - *The use of non-generation resources such as managing demand through sponsorship of energy efficiency and heating fuel switching and increasing imports through strategic transmission expansion to the U.S. can economically delay the need for generation investments whether they be natural gas or hydroelectric facilities (LCA, p.9B-8)*
 - LCA Figure 9-94 indicates the financial advantages

NFAT Information – Plan 17

Plan Number	20 Year	35 Year	50 Year	78 Year	Break Even Year	78 Year IRR
14	-3887	-766	714	1696	2054	6.15%
16	-256	-106	-140	-136	N/A	-0.27%
17	35	583	1095	1439	2030	12.91%

Figure 9-94: LCA Alternative Plans and Preferred Development Plan Relative to the All Gas Plan - Millions of 2014 Present Value Dollars

NFAT Information – Plan 17

- “Economic delay” – Plan 17
 - *MH’s 15 options also lack a set of plans to test the timing of resource additions such as delaying Keeyask 5 or 10 years, or the addition of natural gas fueled generation or wind generation and then the development of Keeyask or Conawapa, or even plans where we can compare if there are benefits to adding transmission to a natural gas generation plan. (LCA p.9B-27-28)*

NFAT Information – Plan 17

- Implications – Plan 17
 - Cost of suspending Keeyask
 - “Window of opportunity” may close
 - Alternative export contracts
 - Regional cumulative effects assessment
 - Environmental impacts and benefits of PDP (or at least Keeyask) deferred or replaced by those of Plan 17

NFAT Information – Plan 17

- Implications – Plan 17
 - Section 12.6.2 of the JKDA construction target of 630 person-years for KCNs delayed or JKDA terminated
 - Section 12.7.1 of the JKDA operational employment 20-year for KCNs terminated if JKDA terminated
 - Do net benefits for construction employment erode?
 - Financial benefits under the JKDA delayed or agreement terminated (Article 21)
 - Compensation under adverse effects agreements no longer payable (e.g. War Lake AEA, s.11.1)

NFAT Information – Wind

- NFAT Screening Analysis – Key Issues
 - Land use impacts
 - Birds and bats
 - Employment
 - Aboriginal “neutrality”

NFAT Information – Wind

- Employment
 - Table 3-1 in my report summarizes direct employment for design wind projects in BC at 275 P-Y for the 1755 MW in the Wind/Gas Plan
 - Appendix 7.2 in the NFAT states direct operations employment for a generic 65 MW wind facility is 4-8 full-time positions, or 108 to 216 P-Y based on 1755 MW in the Wind/Gas Plan
 - Estimates in the NFAT lower or may be due to methodological or real project differences

NFAT Information – Wind

- Employment – Economic Impact
 - Appendix 2.3, Table 1 of NFAT indicates direct Provincial employment of 86 P-Y for the PDP
 - Operations direct employment for wind is higher than for PDP
 - Appendix 2.3, Table 1 of NFAT indicates total Provincial employment of 149 P-Y for the PDP
 - Table 3-1 in my report shows total employment for design wind projects in BC at 718 P-Y for the 1755 MW in the Wind/Gas Plan
 - Total operations employment for wind is higher than for PDP

NFAT Information – Wind

- Employment
 - Large hydroelectric projects tend to create higher levels of construction employment than wind
 - Alternatives with wind provide higher levels of operations employment
 - Construction advantage of hydro is made up over time

NFAT Information – Wind

- Employment
 - What about “net” benefit or “economic rent”?
 - Creating employment where it is needed is of higher value
 - The value of employment in wind regions of the Province not determined in the NFAT
 - MH/MMF 023 – To the extent that the current levels of Aboriginal unemployment are the result of historical outcomes of training or hiring of Aboriginal people by Manitoba Hydro in the affected communities, the PDP fares better in the MA-BCA

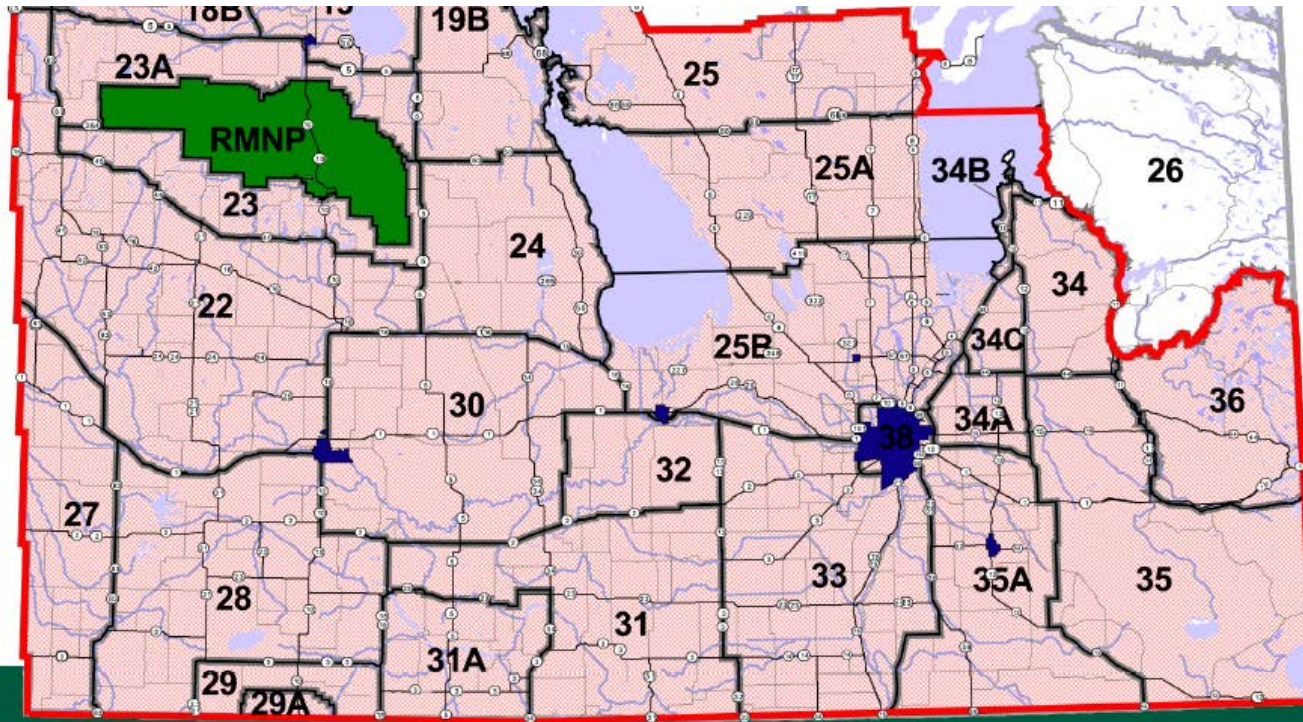
NFAT Information – Wind

- Aboriginal interest (CAC/MH I 231a)
 - Employment (construction and operations):
 - Employment of Aboriginal persons is not estimated or “nil”
 - Local business opportunities:
 - Business opportunities for Aboriginal persons in the case of both with and natural gas development is presumed to be “nil”
 - Reason given is development on private land

NFAT Information – Wind

- Aboriginal interest
 - With respect to the Manitoba Métis Community, the existing wind farms at St. Joseph and St. Leon are in close proximity to Métis communities at Carman, Morris and St. Agathe.
 - The southern and southwestern regions of Manitoba where wind development is more likely are also located entirely within recognized Métis Harvesting Zones.

NFAT Information – Wind



Manitoba

- https://www.gov.mb.ca/conservation/pdf/conserv_recognized_areas_for_harvesting_map.pdf

4. Information to Assist the PUB - Hydroelectric

Information to Assist the PUB

1. Prior hydroelectric projects on the Nelson River
2. Similar hydroelectric complexes on other river systems

Information to Assist the PUB

- Prior hydroelectric projects
 - The actual environmental effects of the existing hydroelectric facilities
 - Potentially valuable to understanding the likely macroenvironmental impact of the PDP, which would be constructed in a similar landscape
 - Located in similar biophysical and socio-economic context

Information to Assist the PUB

- Prior hydroelectric projects
 - Lack of comprehensive, organized information concerning the residual environmental effects of the existing hydroelectric facilities
 - More information could come out of the recommended regional cumulative effects assessment – but would come too late

Information to Assist the PUB

2. Similar hydroelectric complexes – criteria
 - Multiple large generation facilities and/or river diversions built over several decades
 - High voltage transmission facilities
 - New generation, diversion and/or transmission facilities assessed in the past decade
 - Existing or proposed generation facilities on the main stem of the river system
 - Substantial implications for Aboriginal groups
 - Located in boreal ecosystems
 - Reviewed by an independent panel

Information to Assist the PUB

- Similar hydroelectric complexes
 - La Grande Complex (Eastmain 1-A Rupert Diversion)
 - Churchill River (Labrador) (Lower Churchill)
 - Peace River (Site C)

Eastmain 1-A Rupert Diversion

- Project description
 - The “Eastmain 1-A Powerhouse and Rupert Diversion” entailed the construction of Eastmain 1-A powerhouse and Sarcelle powerhouse, as well as the partial diversion of the Rupert River into Eastmain 1-A reservoir, which would be diverted into the La Grande Complex via the Eastmain-1 reservoir.

Eastmain 1-A Rupert Diversion

- Boumhounan Agreement
 - The Project was developed pursuant to the *Agreement Concerning a New Relationship Between le Gouvernement du Québec and the Crees of Québec (NRA)*. The *Boumhounan Agreement*, a sub-agreement of the NRA that pertains specifically to the Project, was signed between the Crees of Québec, Hydro-Québec and Société d'énergie de la Baie James.

Eastmain 1-A Rupert Diversion

- Implications – Agreement renegotiation
 - Historic agreements, like the JBNQA, can be renegotiated as circumstances change
 - The framework for dealings between the Crown and Aboriginal peoples is part of an ongoing relationship and can change over time
 - It is not uncommon for large hydroelectric utilities to reconsider their initial plans in light of changing circumstances

Eastmain 1-A Rupert Diversion

- Implications – electricity surplus
 - As a result of developing both the Project, the Romaine Hydroelectric Complex and wind resources, coupled with the continued decline in load growth in domestic and export markets, Hydro Quebec will be running a large surplus for many years
 - Unnecessary and permanent imposition of adverse environmental effects on the receiving environment and communities

Eastmain 1-A Rupert Diversion

- Implications – cumulative effects
 - The findings of the Eastmain 1-A Rupert Diversion Panel support the concern that the cumulative environmental effects related to large-scale hydroelectric developments cannot be determined without a comprehensive research and follow-up program related to the existing facilities

Eastmain 1-A Rupert Diversion

- Implications – clear benefits
 - The impacts can be mitigated only if all the necessary conditions are put into effect, and justifiable only if there are clear benefits,” (presumably compared to the adverse effects but also compared to the alternatives available). (La Grande Panel Report)

Eastmain 1-A Rupert Diversion

- Dissenting Opinion
 - “The project’s economic profitability must be assessed on the basis of environmental requirements before permits are obtained, otherwise the project would be funded on ‘environmental credit’”
 - The onus is on Manitoba Hydro to demonstrate that the macroenvironmental risks have been substantially addressed so as not to threaten either the economic viability of the PDP or threaten the economic advantage (if any) that the PDP may have over the alternative Plans (if any) that have lower macroenvironmental impacts

Lower Churchill

- Churchill Falls Project constructed in the late 1960s
- Lower Churchill Project
 - Gull Island Generation Project on the Churchill River downstream of the existing Churchill Falls Project
 - Muskrat Falls Generation Project on the Churchill River downstream of the proposed Gull Island Generation Project

Lower Churchill

- Tshash Petapen Agreement
 - A Land Claim AIP
 - Upper Churchill Redress Agreement
 - Lower Churchill IBA
- Typlan noted:
 - “The IBA and the UCRA come into effect immediately upon signing.”

Lower Churchill

- Implications for the NFAT
 - Benefits associated with the Upper Churchill Redress Agreement not contingent on the Lower Churchill Project proceeding
 - “Operational jobs” (JKDA 12.7.1) contingent on the Keeyask Project proceeding
 - MH/MMF I 016: Were other opportunities available to improve performance of existing NFA implementation agreements, including financially?

Lower Churchill

- Implications for the NFAT
 - Lower Churchill Project preferred variant changed
 - During the reviews of hydroelectric projects, which are necessarily lengthy as a result of the complexity of issues involved, circumstances can change materially

Lower Churchill

- Recommendation
 - The PUB clearly indicate its understanding of the description of the PDP (or alternative plan) that is being recommended
 - As appropriate, indicate any changes to the PDP (or other plan being recommended) that would be inconsistent with the findings of the PUB with respect to the associated macroenvironmental impact (e.g. changes that would make the PDP or recommended plan acceptable or unacceptable, based on macroenvironmental impact)

Lower Churchill

- Implications for the NFAT
 - Use of integrated resource planning (IRP) process was recommended by Lower Churchill Panel
 - Material to ensuring that DSM is properly considered as a resource option, and that the macroenvironmental impact of DSM is properly evaluated
 - The decision not to include DSM as a resource option is to implicitly accept greater macroenvironmental impact from the outset and greater macroenvironmental impact than is necessary

Lower Churchill

- Implications for the NFAT
 - Large-scale hydroelectric projects can be associated with many significant environmental effects, in the case of Lower Churchill
 - Fish assemblage and habitat
 - Loss of terrestrial habitat
 - Caribou
 - Etc.

Lower Churchill

- Implications for the NFAT
 - Cumulative effects of the interaction between existing and proposed hydroelectric projects are poorly understood and contribute to uncertainties regarding the “consequence of the changes” to the environment and the “potential significance of those changes.”

Lower Churchill

- Implications for the NFAT
 - Despite the extensive loss of the existing river valleys, inundation of the remaining portions was still considered highly significant

Site C

- Developed beginning in the 1950s, pursuant to British Columbia's Two Rivers policy, the W.A.C. Bennett Dam was completed in 1968 and the Peace Canyon Dam in 1980
- The proposed Site C generating station located approximately 83 kilometres downstream from the existing Peace Canyon Dam on the Peace River

Site C

- Historical agreements with some First Nations on upstream projects
 - Addressing relocation of communities and effects on those communities
 - No agreements addressing effects on non-relocated communities

Site C

- BC Hydro approach to Site C agreements
 - Provide cash payments, both lump sum and payments streams over time
 - Support education, training, and community infrastructure
 - Consider land compensation through Crown land transfers
 - Implement land protection measures or special land management designations to compensate for lost lands

CEAR #2201, p.24, lines 5-21. <http://www.ceaa-acee.gc.ca/050/documents-eng.cfm?evaluation=63919>

Site C

- Implications for the NFAT
 - Large-scale hydroelectric projects can be associated with many significant environmental effects
 - Proponent found several significant adverse environmental effects

Site C

- Implications for the NFAT
 - Cumulative effects of the interaction between existing and proposed hydroelectric projects are very often not properly assessed and this contributes to uncertainties regarding the “consequence of the changes” to the environment and the “potential significance of those changes.”

Site C

- Implications for the NFAT
 - Incorporating the flow regulation and the impacts associated with the existing two dams into the baseline, it assumes or presupposes that the impacts of the existing dam operations are to a certain extent acceptable

Site C

- Implications for the NFAT
 - Viewing additional impacts in the context of larger impacts that occurred historically and that are or may no longer be acceptable is not appropriate
 - How future generations view the choices we make today may be very different than the way we see them ourselves

4. Information to Assist the PUB - Wind

Information to Assist the PUB

1. Existing Wind Resources in Manitoba
2. Wind Resources in other Jurisdictions

Information to Assist the PUB

1. Existing wind resources in Manitoba

- The actual environmental effects of the existing wind facilities
- Potentially valuable to understanding the likely macroenvironmental impact of more wind, which would be constructed in a similar landscape
- Located in the same biophysical and socio-economic context

Information to Assist the PUB

- Existing wind resources in Manitoba
 - St. Joseph's Wind Energy Project
 - St. Leon Wind Energy Project
- Total installed capacity of 237 MW
- Ecologo certified and Green-e certifiable
- Qualifies as renewable energy in Minnesota, but Manitoba Hydro does not realize any Class I REC value

Information to Assist the PUB

- St. Joseph's Wind Energy Project
 - The 60 turbines (138 MW) are distributed over an area of 215 km² of primarily agricultural lands
 - The Project operates under a 27-year power purchase agreement between Manitoba Hydro and Pattern Energy Group LP
 - Developed over a 6-year period beginning in 2005

Information to Assist the PUB

- Implications – Wind development schedule
 - Development within this timeframe included wind resource assessments, regulatory process and construction
 - Community engagement and potentially wildlife studies would also need begin 2-3 years prior to the commencement of the regulatory process
 - Time to operation can be shortened

Information to Assist the PUB

- St. Joseph's Wind – Significant effects
 - There were no predicted significant adverse residual environmental effects for any environmental valued components, and follow-up monitoring to date confirms this prediction

Information to Assist the PUB

- Implications – Land impacts
 - Agriculture could continue unaffected below the transmission lines or near the wind turbines, other than in the immediate infrastructure footprint area
 - The criterion of “impacted land area” does not consider the potential for remediating the affected area following the end of the useful service life of the particular resource option

Information to Assist the PUB

- Implications – Land impacts
 - Project Area was over 215 km²
 - About 80 km² for a 100 MW facility on average, or about 1,600 km² for the development of 2000 MW (i.e. 237 existing + 1755 under Plan 3)
 - Land impacts less than in some other regions

Information to Assist the PUB

- Implications – Land Impacts
 - Collective landscape and visual impact
 - Would require planning, management and social license:
 - Willing community hosts
 - Appropriate land use planning in advance
 - Opportunity for community benefits
 - Management and monitoring committee

Information to Assist the PUB

- Implications – Birds
 - The mortality rates for two years expected to represent a low impact on avian populations
 - Well below federal thresholds established by Environment Canada
 - Bird mortality at the St. Joseph Wind Project will continue to remain consistently low throughout the life of the project

Information to Assist the PUB

- Implications – Bats
 - The mortality rate for the first year represents a low bat mortality rate while that for the second year represents a moderate bat mortality rate for modern wind energy facilities in North America
 - It is possible that proximity to the Red River may have an upward influence on mortality rates at turbines along the eastern edge of the project area

Information to Assist the PUB

- Implications – Cumulative Effects
 - 15-20 more wind projects could pose a collective burden for some species in some locations
 - Development of a cumulative effects management framework aimed at identifying ecologically suitable locations
 - Review of NRCan bird and bat data
 - Possible to minimize the potential for macroenvironmental and socioeconomic impacts related to more intensive wind development

Information to Assist the PUB

- St. Joseph's Wind – Socio-economic benefits
 - Compensation to 250 directly-affected land owners
 - Compensation to those along the transmission corridor
 - Annual grant (\$20,000) to the local museum
 - Priority hiring of local residents

Information to Assist the PUB

- Implications – Socio-economic benefits
 - General expectation that there will be an opportunity to own the energy resource, either through a co-operative or some other form of ownership share
 - Permits those whose lands may not be suitable for wind turbines, but who experience impacts to benefit
 - May “bring on-side” those who might otherwise oppose a project

Information to Assist the PUB

- St. Josephs' Wind – Employment
 - Creation of 200 to 300 direct jobs during the construction phase and 15 direct jobs during the operating phase
 - Local populations, including members of Roseau River First Nation, given priority in employment and training
 - The provision of 15 direct jobs during operation of a 138 MW Project suggests 190 jobs for 1755 MW (i.e. Plan 3)
 - Reasonably consistent with findings of operations employment for similar projects in British Columbia

Information to Assist the PUB

2. Wind resources in other jurisdictions

- Observations, conclusions and recommendations of regulatory decisions
 - Environmental assessment decision statements and related documents
- Same jurisdictions as those considered for hydroelectric resources
 - Newfoundland and Labrador, British Columbia and Québec, with Ontario added later

Information to Assist the PUB

- Wind resources in other jurisdictions
 - Seeking findings that would have general application to consideration of the macroenvironmental impact and socio-economic impacts and benefits of additional wind resources in Manitoba

Information to Assist the PUB

- Implications – Technical
 - Wind development schedule
 - Average of 4 years RFP to COD, as per NFAT observations
 - Project size
 - Growing over time to average of 150 MW, somewhat higher than the 65 MW used in the NFAT
 - Decommissioning plans
 - Required in Québec, and must include setting aside appropriate funds to ensure that decommissioning occurs
 - Required in Manitoba, but appears to be unenforced

Information to Assist the PUB

- Implications – Environment
 - Of the 25 environmental assessment decisions reviewed, none required the justification of significant residual adverse environmental effects in order to approve a wind project
 - Post-construction monitoring of birds and bats was required in essentially every instance, and uncertainty about the potential effects on these species was acknowledged on several occasions as the justification for this monitoring

Information to Assist the PUB

- Implications – Socio-economic benefits
- **(Put up – MH/MMF I 25b)**
 - BC, Quebec, Manitoba, NL, Ontario
 - Wind projects larger than 20 MW
 - Received a power purchase agreement and entered the regulatory process
 - Environmental assessment decision statement could be located

Information to Assist the PUB

- Aboriginal involvement (MH/MMF I 25b)
 - At least 7 of 92 projects have some level of Aboriginal ownership (from 10% to 100%)
 - At least 9 others have revenue-sharing and benefits agreements
 - Estimates conservative due to confidential agreements or still in negotiation
 - All with projects coming to service since 2011
 - Two projects located on private lands

Information to Assist the PUB

- Implications – Aboriginal involvement
 - Aboriginal groups are increasingly participating in the wind industry
 - Aboriginal ownership of wind projects can and does occur on Crown land and private land

Information to Assist the PUB

- Community involvement (MH/MMF I 25b)
 - At least 9 of 92 projects have some level of community ownership (from 10% to 100%)
 - At least 32 others have revenue-sharing and benefits agreements
 - Revenues are above and beyond taxation, permitting and land-owner compensation
 - Estimates conservative due to confidential agreements or still in negotiation

Information to Assist the PUB

- Financial benefits (MH/MMF I 25b)
 - On average, where revenue agreements are in place with Aboriginal groups and/or local communities, and where specific monetary information could be obtained, the revenues received over a 20-year contract period are on the order of \$50,000 per installed MW

5. Conclusions

Conclusions

1. The conclusions and recommendations to government provided by the CEC, though necessary to the NFAT, will apply only to a single component of the PDP and to those alternative plans that contain Keeyask as a plan component.
2. As a result, other means to determine the likelihood of significant adverse environmental changes or effects as well as the “consequences of these changes” need to be used in the absence of information from additional environmental assessments of the PDP

Conclusions

3. Considering the current relatively modest differences between the costs of wind resources and the costs of hydroelectric resources, the likely decline in the cost of wind resources, and the imposition of the macro environmental impacts associated with the PDP, there appears to be merit in analyzing the most appropriate strategy for delaying a decision on the PDP to beyond 2030.
4. The fact that so many wind projects have been approved in Canada, including the development of many projects in the Gaspésie region of Québec, without concerns respecting significant residual adverse environmental effects, contrasts with the findings of environmental assessment reviews of large-scale hydroelectric projects in the same jurisdictions.

Conclusions

3. Considering the current relatively modest differences between the costs of wind resources and the costs of hydroelectric resources, the likely decline in the cost of wind resources, and the imposition of the macro environmental impacts associated with the PDP, there appears to be merit in analyzing the most appropriate strategy for delaying a decision on the PDP to beyond 2030.
4. The fact that so many wind projects have been approved in Canada, including the development of many projects in the Gaspésie region of Québec, without concerns respecting significant residual adverse environmental effects, contrasts with the findings of environmental assessment reviews of large-scale hydroelectric projects in the same jurisdictions.

Conclusions

5. To best achieve this potential, development of additional wind resources should be preceded by development of a cumulative effects management framework aimed at identifying those locations most economically, ecologically and socially suitable for future wind energy development. This would have the effect of minimizing the potential for macro environmental and socioeconomic impacts related to more intensive wind development as part of any future alternative plan to the PDP.
6. The development of many wind projects in other jurisdictions supports the characterization of wind resources as a flexible system planning option that can be developed on short time frames, in a sequence that avoids costly surpluses, and in a manner that supports the maximization of socio-economic benefits for Manitobans, including Aboriginal groups.

Conclusions

7. Finally, as a result of evolution of public knowledge of wind energy and the many examples of communities participating as owners in the development of wind resources and other smaller-scale renewables, a different approach to that used previously in Manitoba will be necessary in order to achieve the highest levels of socioeconomic benefits for Aboriginal communities and for Manitobans in general.

END OF PRESENTATION

